

CoE197s

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Exercise 1: Running containers

A. Pulling an image

1. Let's see what images we have currently on our machine, by running docker images.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY              TAG         IMAGE ID      CREATED       SIZE
docker101tutorial        latest      ed92b27e7580  23 minutes ago  28MB
seancabalse/docker101tutorial latest      ed92b27e7580  23 minutes ago  28MB
alpine/git               latest      2abeafdf5b9   2 days ago    25.1MB
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>
```

2. We can search for images using docker search <keyword>; where keyword is *ubuntu*

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker search ubuntu
NAME                DESCRIPTION                STARS     OFFICIAL   AUTOMATED
ubuntu              Ubuntu is a Debian-based Linux operating sys... 12256     [OK]
dorowu/ubuntu-desktop-lxde-vnc Docker image to provide HTML5 VNC interface ... 532       [OK]
webosphere-liberty  WebSphere Liberty multi-architecture images ... 270       [OK]
rastashaep/ubuntu-sshd Dockerized SSH service, built on top of offi... 251       [OK]
consoli/ubuntu-xfce-vnc Ubuntu container with "headless" VNC session. 240       [OK]
ubuntu-upstart      Upstart is an event-based replacement for th... 110       [OK]
landlinternet/ubuntu-16-nginx-php-phpmysql-5 ubuntu-16-nginx-php-phpmysql-5 50
open-liberty        Open Liberty multi-architecture images based... 45        [OK]
ubuntu-debootstrap  debootstrap --variant=minbase --components=m... 44        [OK]
i386/ubuntu         Ubuntu is a Debian-based Linux operating sys... 25
nuagebec/ubuntu     Simple always updated Ubuntu docker images w... 24        [OK]
solita/ubuntu-systemd Ubuntu + systemd 24
landlinternet/ubuntu-16-apache-php-5.6 2. On a fresh Docker ubuntu-16-apache-php-5.6 14
landlinternet/ubuntu-16-apache-php-7.0 ubuntu-16-apache-php-7.0 13
landlinternet/ubuntu-16-nginx-php-phpmysql-mariadb-10 ubuntu-16-nginx-php-phpmysql-mariadb-10 11
landlinternet/ubuntu-16-nginx-php-5.6-wordpress-4 ubuntu-16-nginx-php-5.6-wordpress-4 9
landlinternet/ubuntu-16-nginx-php-5.6 ubuntu-16-nginx-php-5.6 8
landlinternet/ubuntu-16-apache-php-7.1 ubuntu-16-apache-php-7.1 7
pivotaldata/ubuntu * Official Docker A quick freshening-up of the base Ubuntu docu... 4
landlinternet/ubuntu-16-nginx-php-7.0 ubuntu-16-nginx-php-7.0 4
pivotaldata/ubuntu16.04-build * ubuntu:16.04 Ubuntu 16.04 image for GDB compilation 2
landlinternet/ubuntu-16-php-7.1 * ubuntu:16.04 ubuntu-16-php-7.1 1
smarterentry/ubuntu * elasticsearch ubuntu with smarterentry 1
landlinternet/ubuntu-16-sshd * ubuntu:16.04 ubuntu-16-sshd 1
pivotaldata/ubuntu-gpdb-dev * nginx:latest Ubuntu images for GPDB development 1
```

Find images online at DockerHub. Run `docker pull ubuntu:16.04` to pull an image of Ubuntu 16.04 from DockerHub.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker pull ubuntu:16.04
16.04: Pulling from library/ubuntu
92473f7e455: Pull complete
fb52bde70123: Pull complete
64788f86e3f: Pull complete
33f6d5f2e001: Pull complete
Digest: sha256:eed7e1076bbcf342c4474c718e5438af4784f59a4e88ad687d9b98483b59ee4
Status: Downloaded newer image for ubuntu:16.04
docker.io/library/ubuntu:16.04
```

3. Pulling different versions of the same image. Run `docker pull ubuntu:16.10` to pull an image of Ubuntu 16.10.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker pull ubuntu:16.10
16.10: Pulling from library/ubuntu
dca7be20e546: Pull complete
40bca54f5968: Pull complete
61464f23390e: Pull complete
d99f0bcd5dc8: Pull complete
120db6f90955: Pull complete
Digest: sha256:8dc9652808dc091400d7d5983949043a9f9c7132b15c14814275d25f94bca18a
Status: Downloaded newer image for ubuntu:16.10
docker.io/library/ubuntu:16.10
```

Running docker images again.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY          TAG          IMAGE ID       CREATED        SIZE
docker101tutorial   latest       ed92b27e7580   34 minutes ago 28MB
seancabalse/docker101tutorial latest       ed92b27e7580   34 minutes ago 28MB
alpine/git          latest       2abeafdf5b9    2 days ago    25.1MB
ubuntu              16.04       aefd7f02ae24   3 weeks ago    134MB
ubuntu              16.10       7d3f705d307c   3 years ago    107MB
```

4. Removing unwanted images. Run `docker rmi <IMAGE ID>` to remove Ubuntu 16.10 image. Or partial IMAGE ID

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker rmi 7d3f705d307c
Untagged: ubuntu:16.10
Deleted: sha256:8dc9652808dc091400d7d5983949043a9f9c7132b15c14814275d25f94bca18a
Deleted: sha256:7d3f705d307c7c225398e04d4c4f8512f64eb8a65959a1fb4514dfde18a047e7
Deleted: sha256:d9db289b9342d9617596cd6ee3bba988629e24d9afa5db4e4b0e4e491c65007d
Deleted: sha256:a87725e8597b97f2399bc3aa50b0e2eec903b8ce19055668d3befb012918205c
Deleted: sha256:38cf10a2801529348366953e9b933d3524360dedc91d3e4d5d7f941da0c973c9
Deleted: sha256:61172966249d43026dbd017eec3a9575e37bddf8a269a9f09ecb559d7bfe7fef
Deleted: sha256:57145c01eb80040fdd0a24cde20af4788605b49593188d4f7efab099af89a08e

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY          TAG          IMAGE ID       CREATED        SIZE
docker101tutorial   latest       ed92b27e7580   38 minutes ago 28MB
seancabalse/docker101tutorial latest       ed92b27e7580   38 minutes ago 28MB
alpine/git          latest       2abeafdf5b9    3 days ago    25.1MB
ubuntu              16.04       aefd7f02ae24   3 weeks ago    134MB
```

Delete image by tag.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker images
REPOSITORY              TAG         IMAGE ID      CREATED        SIZE
docker101tutorial        latest      ed92b27e7580  39 minutes ago 28MB
seancabalse/docker101tutorial latest      ed92b27e7580  39 minutes ago 28MB
alpine/git               latest      2abeafdfff5b9 3 days ago    25.1MB
ubuntu                   16.04      aefd7f02ae24  3 weeks ago    134MB
ubuntu                   16.10      7d3f705d307c  3 years ago    107MB

C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker rmi 16.10
Error: No such image: 16.10

C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker rmi ubuntu:16.10
Untagged: ubuntu:16.10
Deleted: sha256:8dc9652808dc091400d7d5983949043a9f9c7132b15c14814275d25f94bca18a
Deleted: sha256:7d3f705d307c7c225398e04d4c4f8512f64eb8a65959a1fb4514dfde18a047e7
Deleted: sha256:d9db289b9342d9617596cd6ee3bba988629e24d9afa5db4e4b0e4e491c65007d
Deleted: sha256:a87725e8597b97f2399bc3aa50b0e2eac903b8ce19055668d3befb012918205c
Deleted: sha256:38cf10a2801529348366953e9b933d3524360dedc91d3e4d5d7f941da0c973c9
Deleted: sha256:61172966249d43026dbd017eec3a9575e37bddf8a269a9f09ecb559d7bfe7fef
Deleted: sha256:57145c01eb80040 added0a24cde20af4788605b49593188d4f7efab099af89a08e
```

B. Running our container

1. Simple example. Run `docker run ubuntu:16.04 /bin/echo 'Hello world'`

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run ubuntu:16.04 /bin/echo 'Hello world'
'Hello world'
```

2. Checking what containers we have. Run `docker ps`.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps
CONTAINER ID   IMAGE     COMMAND   CREATED   STATUS    PORTS   NAMES
```

3. Run `docker run ubuntu:16.04 /bin/bash`.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run ubuntu:16.04 /bin/bash
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>_
```

Using `-it` flag to run command interactively and using `exit` to end BASH session.

```
C:\Users\Dell\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run -it ubuntu:16.04 /bin/bash
root@c3ad4741d79c:/# pwd
/
root@c3ad4741d79c:/# ls
bin boot dev etc home lib lib64 media mnt opt proc root run sbin srv sys tmp usr var
root@c3ad4741d79c:/# exit
exit
```

4. Using `-d` flag.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run -d ubuntu:16.04 /bin/sleep 3600
#372f70a36315106c4ee45c1f61c7f4b665f54493b489feca8423520cebfb06c

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS   NAMES
#372f70a3631   ubuntu:16.04   "/bin/sleep 3600"       38 seconds ago Up 38 seconds        admiring_bardeen
```

5. Running docker exec.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker exec -it f37 /bin/bash
root@f372f70a3631:/# ps aux
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root         1  0.0  0.0   4372   664 ?        Ss   14:28   0:00 /bin/sleep 3600
root        17  0.2  0.0  18232  3388 pts/0    Ss   14:31   0:00 /bin/bash
root       199  0.0  0.0   34420  2864 pts/0    R+   14:31   0:00 ps aux
root@f372f70a3631:/# exit
exit

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS   NAMES
#372f70a3631   ubuntu:16.04   "/bin/sleep 3600"       3 minutes ago Up 3 minutes        admiring_bardeen

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>
```

6. Using docker stop and docker kill to stop the docker container running.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS   NAMES
#372f70a3631   ubuntu:16.04   "/bin/sleep 3600"       4 minutes ago Exited (137) 10 seconds ago   admiring_bardeen
#3ad4741d79c   ubuntu:16.04   "/bin/bash"             6 minutes ago Exited (0) 5 minutes ago     dazzling_lamarr
#cb8ef93d8a4   ubuntu:16.04   "/bin/bash"             7 minutes ago Exited (0) 7 minutes ago     zen_rhodes
#3a861fb92af   ubuntu:16.04   "/bin/echo 'Hello wo..." 11 minutes ago Exited (0) 11 minutes ago    quizzical_spence
#aa09de2871b   docker101tutorial "/docker-entrypoint..." 51 minutes ago Exited (0) 44 minutes ago    docker-tutorial
#4cab1ldfebb   alpine/git      "git clone https://g..." About an hour ago Exited (0) About an hour ago    repo
```

C. Removing Containers

7. Deleting old and obsolete containers.

```
C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS   NAMES
#372f70a3631   ubuntu:16.04   "/bin/sleep 3600"       5 minutes ago Exited (137) About a minute ago   admiring_bardeen
#3ad4741d79c   ubuntu:16.04   "/bin/bash"             7 minutes ago Exited (0) 5 minutes ago     dazzling_lamarr
#cb8ef93d8a4   ubuntu:16.04   "/bin/bash"             8 minutes ago Exited (0) 8 minutes ago     zen_rhodes
#3a861fb92af   ubuntu:16.04   "/bin/echo 'Hello wo..." 12 minutes ago Exited (0) 12 minutes ago    quizzical_spence
#aa09de2871b   docker101tutorial "/docker-entrypoint..." 52 minutes ago Exited (0) 45 minutes ago    docker-tutorial
#4cab1ldfebb   alpine/git      "git clone https://g..." About an hour ago Exited (0) About an hour ago    repo

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker rm f372f70a3631
f372f70a3631

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker ps -a
CONTAINER ID   IMAGE          COMMAND                  CREATED        STATUS        PORTS   NAMES
#3ad4741d79c   ubuntu:16.04   "/bin/bash"             8 minutes ago Exited (0) 6 minutes ago     dazzling_lamarr
#cb8ef93d8a4   ubuntu:16.04   "/bin/bash"             9 minutes ago Exited (0) 9 minutes ago     zen_rhodes
#3a861fb92af   ubuntu:16.04   "/bin/echo 'Hello wo..." 12 minutes ago Exited (0) 12 minutes ago    quizzical_spence
#aa09de2871b   docker101tutorial "/docker-entrypoint..." 53 minutes ago Exited (0) 46 minutes ago    docker-tutorial
#4cab1ldfebb   alpine/git      "git clone https://g..." About an hour ago Exited (0) About an hour ago    repo

C:\Users\De11\OneDrive\Desktop\Academic\CoE197s\ME8\1-running_containers>docker run --rm ubuntu:16.04 /bin/echo 'Hello and goodbye!'
Hello and goodbye!
```